



# COTTON TALES

Central Queensland

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## Latest helicoverpa thresholds for mungbeans.

Article by Hugh Brier & Kate Charleston (QDPI&F). From [www.thebeatsheet-ipmnews.blogspot.com](http://www.thebeatsheet-ipmnews.blogspot.com)

Revised thresholds for helicoverpa in flowering/podding mungbeans are based on a rate of damage of 35 kg/ha per larva per square metre in podding crops. The new thresholds are nearly double the old threshold of 1/m<sup>2</sup>, & make allowances for variations in control costs and crop value. For a typical scenario with pesticide control (including aerial application) costing \$40/ha & an anticipated crop value of \$600/t, the new threshold (see chart) is 1.9 larvae/m<sup>2</sup>.

### Helicoverpa threshold table for mungbeans 2008

Based on data from 2006/07 threshold trial. Assumes yield loss of 35kg/ha for every larva/m<sup>2</sup>. There is no allowance for larval mortality, but this is most likely cancelled out by beat sheet sampling inefficiencies. Yield loss is probably at the upper end of that as the trial showed no yield loss for up to 8 larvae/m<sup>2</sup> at flowering.

Cost of Control <sup>a</sup> Value of Damage (\$/ha)	Thresholds <sup>b</sup> (larvae/m <sup>2</sup> ) for Conventional Pesticides <sup>c</sup> at Mungbean Crop Values listed below (\$/t):									
	\$ 400	\$ 450	\$ 500	\$ 550	\$ 600	\$ 650	\$ 700	\$ 750	\$ 800	
\$ 20	1.4	1.3	1.1	1.0	1.0	0.9	0.8	0.8	0.7	
\$ 25	1.8	1.6	1.4	1.3	1.2	1.1	1.0	1.0	0.9	
\$ 30	2.1	1.9	1.7	1.6	1.4	1.3	1.2	1.1	1.1	
\$ 35	2.5	2.2	2.0	1.8	1.7	1.5	1.4	1.3	1.3	
\$ 40	2.9	2.5	2.3	2.1	1.9	1.8	1.6	1.5	1.4	
\$ 45	3.2	2.9	2.6	2.3	2.1	2.0	1.8	1.7	1.6	
\$ 50	3.6	3.2	2.9	2.6	2.4	2.2	2.0	1.9	1.8	
\$ 55	3.9	3.5	3.1	2.9	2.6	2.4	2.2	2.1	2.0	
\$ 60	4.3	3.8	3.4	3.1	2.9	2.6	2.4	2.3	2.1	
\$ 65	4.6	4.1	3.7	3.4	3.1	2.9	2.7	2.5	2.3	

Cross-reference the cost of control versus the crop value to determine the economic threshold (ET). The lower the cost of control, & the higher the crop value, the lower the threshold.

- If cost of control = \$35/ha & crop value = \$450/t, ET = 2.2
- If cost of control = \$25/ha & crop value = \$650/t, ET = 1.1

The thresholds are at the break even point, where the cost of control = the value of the likely damage, or in other words where there is no net gain if you spray & no net loss if you don't spray. Hence control is only recommended if the population exceeds the economic threshold, in other words if the benefit:cost (B:C) ratio is greater than 1.

While IPM guidelines traditionally recommended a B:C ratio of 2:1, most growers using the control cost scenario (above \$40/ha) are unlikely to tolerate another \$40 of damage/ha before taking action. Therefore use the above table as follows: Decide how much extra potential damage (in \$/ha) you are willing to accept before taking action. For example if you are only willing to accept another \$10 of damage/ha before taking action, and control costs & likely crop values are \$40/ha and \$600/t respectively, then adjust your control costs

up to \$50/t, & cross reference with the above crop value to give an action threshold of 2.4 larvae/m<sup>2</sup>.

While early reproductive damage at flowering may be totally compensated for, significant early damage can delay harvest maturity, & may reduce 'commercial harvest yield', i.e. the yield in crops where desiccants are used to dry out green pods lagging behind the main crop of black pods. For this reason, the threshold is conservatively set from flowering to podfill.

Recent data suggest early moderate damage can be totally compensated for with no delay in harvest, in well growing crops with plentiful moisture. In such crops, growers might consider using a helicoverpa NPV product such as VivusMax for low-moderate populations (eg 2/m<sup>2</sup>) provided they are able to guarantee thorough coverage, include an Aminofeed adjuvant and are targeting small larvae (ideally not greater than 5 mm long).

In view of the recent changes to the Helicoverpa threshold in vegetative soybeans, a provisional threshold of 4-5 larvae/m<sup>2</sup> has been set for vegetative mungbeans, in lieu of the old 33% defoliation threshold (which still holds for loopers). This is because helicoverpa are also likely to target the mungbean's auxiliary buds which are the precursors to floral buds. The threshold is set lower than the vegetative soybean threshold because mungbean plants are smaller than soybeans. **Note this vegetative mungbean threshold is provisional & has to be verified in replicated field trials.**

### Helicoverpa and mirids in Mungbeans

Recently we received a number of reports of flowering mungbean crops with above threshold mirid populations & low numbers of Helicoverpa. In such instances, dimethoate (250 mL/ha) plus NPV can be mixed with no risk of incompatibility. **However it is critical to add a buffer such as LI700 to tank mix water to keep the pH below 7, as both dimethoate and NPV are deactivated in alkaline water (pH >7).**

Note that dimethoate is recommended at the lower 250mL/ha rate as this has proven efficacy in DPI&F's trials & has far less impact on beneficials than the full registered rate of 500mL/ha. Preserving as many beneficials as possible will complement NPV's impact on helicoverpa larvae & will reduce the risk of subsequent sprays to control this pest.

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